

WHAT IS CLAIMED IS:

1. A method of evaluating a recovered clock signal that is recovered from a data stream received by a data communication receiver, comprising:

the data communication receiver providing information indicative of a rate
5 of change of an interpolation ratio according to which first and second phases of a local reference clock signal provided by the data communication receiver are combined to form the recovered clock signal; and

in response to said rate of change information, determining whether a phase difference between the recovered clock signal and the local reference clock signal
10 exceeds a predetermined amount of phase difference.

2. The method of Claim 1, wherein said determining step includes determining whether the rate of change exceeds a predetermined threshold rate, and determining that the phase difference exceeds the predetermined amount of phase difference in response to a determination that the rate of change exceeds the
15 predetermined threshold rate.

3. The method of Claim 2, wherein said second-mentioned determining step includes using the recovered clock signal to provide an indication of how much time is required for said interpolation ratio to change by a predetermined amount.

4. The method of Claim 3, wherein said using step includes determining whether said interpolation ratio changes by said predetermined amount within a time period defined by an occurrence of a predetermined number of consecutive cycles of the recovered clock signal, said second-mentioned determining step including determining that the rate of change exceeds the predetermined threshold rate if said interpolation ratio changes by said predetermined amount within said time period.

5. The method of Claim 1, wherein said rate of change information includes information indicative of changes in said interpolation ratio, and wherein said rate of change information also includes the recovered clock signal.

6. The method of Claim 5, wherein said determining step includes using the recovered clock signal and said interpolation ratio change information to determine whether said rate of change exceeds a predetermined threshold rate, and determining that said phase difference exceeds said predetermined amount of phase difference in response to a determination that said rate of change exceeds the predetermined threshold rate.

7. The method of Claim 6, wherein said providing step includes the data communication receiver providing said interpolation ratio change information as thermometer coded data.

8. The method of Claim 7, wherein said using step includes using the recovered clock signal to provide an indication of how much time is required for said thermometer coded data to change from a first value to a second value.

9. The method of Claim 8, wherein said first value is an all 0 value and said second value is an all 1 value.

10. The method of Claim 8, wherein said last-mentioned using step includes determining whether said thermometer coded data changes from said first value to said second value within a time period defined by an occurrence of a predetermined number of consecutive cycles of the recovered clock signal.

11. The method of Claim 10, wherein said first value is an all 0 value and said second value is an all 1 value.

12. An apparatus for evaluating a recovered clock signal that a data communication receiver recovers from a data stream received by the data communication receiver, comprising:

an input for receiving information that is provided by the data communication receiver and is indicative of a rate of change of an interpolation ratio according to which first and second phases of a local reference clock signal provided by the data communication receiver are combined to form the recovered clock signal; and

5 circuitry coupled to said input and responsive to said rate of change information for determining whether a phase difference between the recovered clock signal and the local reference clock signal exceeds a predetermined amount of phase difference.

13. The apparatus of Claim 12, wherein said rate of change information
10 includes information indicative of changes in said interpolation ratio, and wherein said rate of change information also includes the recovered clock signal.

14. The apparatus of Claim 13, wherein said circuitry its responsive to the recovered clock signal and said interpolation ratio change information for determining whether said rate of change exceeds a predetermined threshold rate, said circuitry further
15 responsive to a determination that said rate of change exceeds the predetermined threshold rate for determining that said phase difference exceeds said predetermined amount of phase difference.

15. The apparatus of Claim 14, wherein said interpolation ratio change information includes thermometer coded data.

16. The apparatus of Claim 15, wherein said circuitry includes a counter coupled to said input, and a logic circuit coupled to said input and said counter, said
5 counter responsive to the recovered clock signal for providing to said logic circuit an indication of elapsed time, said logic circuit responsive to said indication for evaluating how much time is required for said thermometer coded data to change from a first value to a second value and thereby producing an indication of said rate of change.

17. The apparatus of Claim 16, wherein said first value is an all 0 value and
10 said second value is an all 1 value.

18. The apparatus of Claim 16, wherein said counter includes an output coupled to said logic circuit for providing thereto a cycle count of the recovered clock signal, said logic circuit responsive to said cycle count and said thermometer coded data for determining whether said thermometer coded data changes from said first value to
15 said second value within a time period defined by an occurrence of a predetermined number of consecutive cycles of the recovered clock signal, said predetermined number of consecutive cycles corresponding to the predetermined threshold rate.

19. The apparatus of Claim 13, wherein said circuitry includes a counter coupled to said input and responsive to the recovered clock signal for providing an indication of elapsed time, and a logic circuit coupled to said counter and said input, said logic circuit responsive to said indication for evaluating how much time is required for
5 said interpolation ratio to change by a predetermined amount.

20. The apparatus of Claim 12, provided in the data communication receiver, and wherein the data communication receiver is one of a data communication transceiver chip and a clock and data recovery chip.